PROJECT PROFILE

Title of the Project: **Documentation of population demography and genetic structure of teak for developing sustainable conservation strategies and resource management**

Project Partners
- Institute of Forest Genetics and Tree Breeding, Coimbatore
- Kerala Forest Research Institute, Peechi, Kerala
- College of Forestry (Sirsi, Karnataka), University of Agricultural Sciences, Dharwad, Karnataka

Project Co-ordinator: Dr. R. Yasodha, Scientist G

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Duration of Project: 2016-2020

Objectives:
1. Documentation of demography and population genetic structure of teak
2. Decipher the spatial genetic structure of teak using genetically divergent populations of teak.
3. Develop strategies for the execution of teak genetic conservation and management plan by the State Forest Departments

Funding agency: Department of Biotechnology, Govt. of India

Summary:
- Teak natural populations from South to Central India were selected to study the extent of genetic variation and local adaptive potential using genome wide SSR markers. Phenophases of leaf, flower and fruit have been documented.
- Bottleneck effect along with genetic drift and local adaptation have played crucial role in designing the genetic structure of these populations, separating them into three genecological zones namely Kerala, Tamil Nadu-Karnataka and Karnataka-Central India (Gujrat and Madhya Pradesh).

- Information on genetic variability, genetic structure, allelic richness, private and unique adaptive alleles of teak populations showed the presence of population specific diversity and revealed the basis of local adaptations.
- Significant association of genetic structure to environmental factors, temperature and precipitation was detected using linked neutral loci (SSR loci IFGTB285 and IFGTB479b).
- Population genetic structure of natural teak populations is influenced by isolation by distance (IBD) and isolation by environment (IBE), specifically the longitude showed greater correlation than latitude.
- Niche modelling identified Central Indian populations to be more vulnerable to climate change and probable shift in the distribution pattern of the species in the ensuing years.